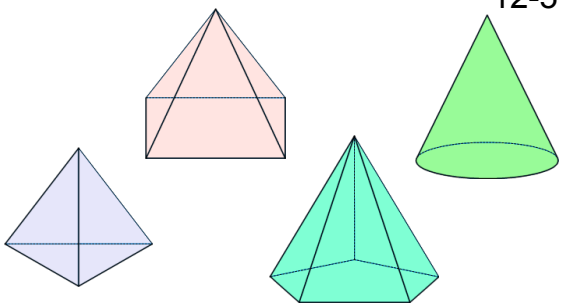
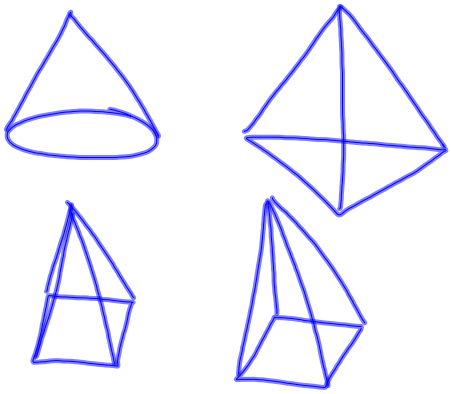
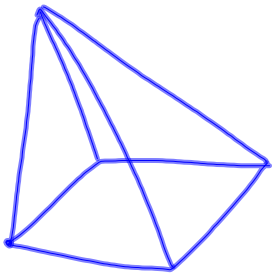
Pyramids and Cones 12-3 12-5



Draw some.





Pyramids Sketchup_square Sketchup-triangle

lateral faces--triangles

altitude-height

slant height ℓ

regular pyramid
- base regular polygon
- lateral edges congruent
- lateral faces congruent isosceles triangles
- altitude goes to the center of base

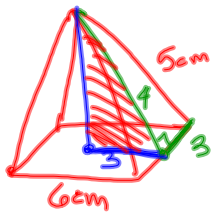
$$LA = \frac{1}{2}pl$$

$$SA = LA + B$$

$$V = \frac{1}{3}Bh$$

Square pyramid

side is 6cm
lateral edge is 5cm



p = 24cm

B = 36cm^2

LA = $\frac{1}{2}p\ell = \frac{1}{2}24 \cdot 4 = 48\text{cm}^2$

SA = $48 + 36 = 84\text{cm}^2$

V = $\frac{1}{3}36 \cdot \sqrt{7} = 12\sqrt{7}\ \text{cm}^3$

$4^2 = 3^2 + h^2$

$\sqrt{7} = h$

r = 5cm

$\ell = 8.5\text{cm}$ $\cos 54 = \frac{5}{\ell}$

h = 6.9cm

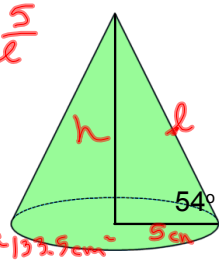
C = 10π cm

B = 25π cm²

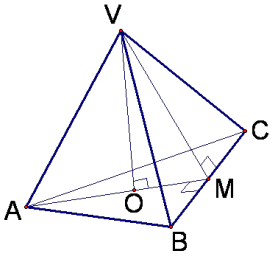
LA = $\frac{1}{2}p\ell = \frac{1}{2}10\pi \cdot 8.5 \approx 133.5\text{cm}^2$

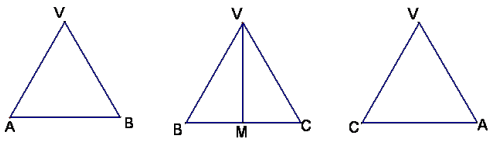
SA = $133.5 + 25\pi \approx 212.1$ cm²

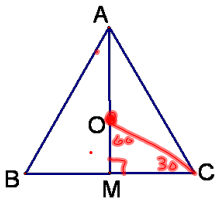
V = $\frac{1}{3}25\pi\, 6.9 \approx 180.6$ cm³



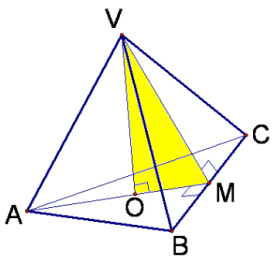
ws

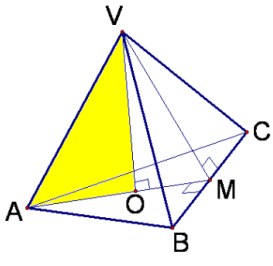


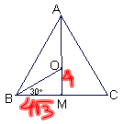


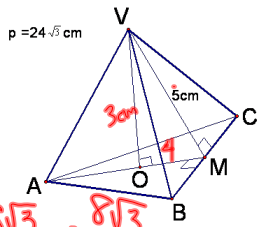


30	60	90
a		2a = r









$B = \frac{(8\sqrt{3})^2\sqrt{3}}{4} = 48\sqrt{3}\text{ cm}^2$

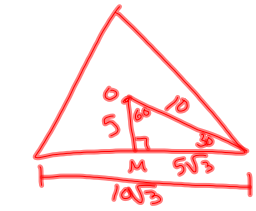
$a = 4$ cm

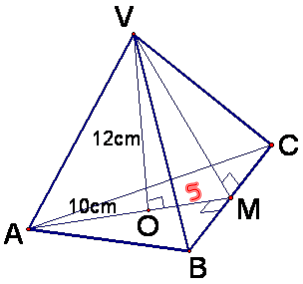
$h = 3$ cm $\quad 5^2 = 4^2 + h^2$

$LA = \frac{1}{2}24\sqrt{3} \cdot 5 = 60\sqrt{3}$ cm²

$SA = 108\sqrt{3}$ cm²

$V = \frac{1}{3}48\sqrt{3} \cdot 3 = 48\sqrt{3}$ cm³





$a = 5$ cm

one side $= 10\sqrt{3}$ cm

$B = \frac{(10\sqrt{3})^2\sqrt{3}}{4} = 75\sqrt{3}$

$\ell = 13$ cm

$P = 30\sqrt{3}$

$LA = 195\sqrt{3}$ cm^2

$SA = 270\sqrt{3}$ cm^2

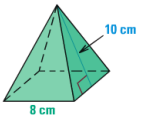
$V = 300\sqrt{3}$ cm^3

Oblique pyramids and cones use the same volume formula!

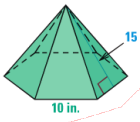
HW
p814-815
#s 3, 4, 6, 7, 22
p832-833
#s3, 4, 6, 9, 14, 16, 21

AREA OF A LATERAL FACE Find the area of each lateral face of the regular pyramid.

3.

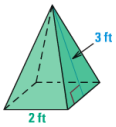


4.

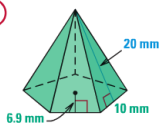


SURFACE AREA OF A PYRAMID Find the lateral area and surface area regular pyramid. Round your answers to two decimal places.

6.



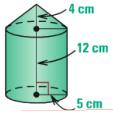
7.



8.

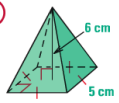
COMPOSITE SOLIDS Find the surface area of the solid. The pyramids are regular and the cones are right. Round your answers to two decimal places, if necessary.

22.

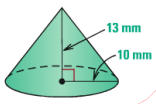


VOLUME OF A SOLID Find the volume of the solid. Round your answer to two decimal places.

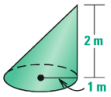
3.



4.



6.



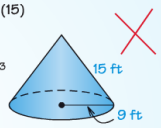
ERROR ANALYSIS *Describe* and correct the error in finding the volume of the right cone or pyramid.

9.

$V = \frac{1}{3}\pi(9^2)(15)$

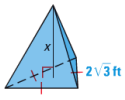
$= 405\pi$

≈ 1272 ft^3



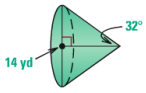
ALGEBRA Find the value of x.

14. Volume $= 7\sqrt{3}$ ft^3



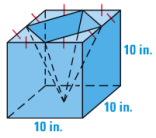
VOLUME OF A CONE Find the volume of the right cone. Round your answer to two decimal places.

16.



Find Volume

21.



Attachments

square_pyramid.skp

triangular pyramid slant height.skp